UNIVERSITY OF LEEDS

Numerical Simulations of Dusty Colliding Wind Binaries

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This thesis is dedicated to my Mum, without her help these past 26 years, there's no way I would have written this.

I'll pay you back I promise!

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Thanks everyone.

Abstract

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Abbreviations

CWB	Colliding Wind Binary
WC	WR Carbon Phase
WCd	Dust forming WC star
WN	WR Nitrogen Phase
WO	WR Oxygen Phase
WR	Wolf-Rayet

Common Symbols

η	Wind momentum ratio
χ	Cooling parameter
$\Lambda(T)$	Cooling function
a	Grain radius
z	Dust-to-gas mass ratio

$\mathrm{M}_\odot$	Solar mass	1.988×10^{33} g
$\mathrm{L}_\odot$	Solar Luminosity	3.828×10^{33} erg s^{-1}

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Introduction and Motivation

Lamberts et al. [2012]

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References

Lamberts, A., Dubus, G., Fromang, S., and Lesur, G. (2012). Colliding wind binaries and γ-ray binaries: Relativistic version of the RAMSES code. pages 406–409.